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A new species and new records of *Oncinopus* (Crustacea: Brachyura: Inachidae) from northern Australia

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ABSTRACT

A new species of the Indo-west Pacific majoid spider crab genus *Oncinopus* is described from Darwin Harbour (Northern Territory), as well as the North West Shelf (Western Australia) and the Gulf of Carpentaria (Queensland). It can be distinguished from other species by differences in the morphology of the male first gonopod, rostral shape, the setation of the dactyl of the first pereiopod, and the length of the last two pairs of pereiopods. *Oncinopus angustifrons* Takeda & Miyake, 1969 is recorded from the North West Shelf, and is the first record of this species from Australia. *Oncinopus aranea* (De Haan, 1839) is recorded from northwestern Australia for the first time. Five species of *Oncinopus* are now recognised, with four of these now known from Australia. A key to distinguish them is provided.

KEYWORDS: Inachidae, northern Australia, North West Shelf, Darwin, taxonomy, new species, new records.

INTRODUCTION

Species in the majoid genera *Oncinopus* and *Achaeus* (family Inachidae) are distinctive in having the dactyli and propodi of their fourth and fifth pereiopods subchelate, very much like the 'carrying crabs' of the families Dorippidae and Dromiidae. Unlike those crabs however, inachids do not use these structures for carrying objects over their back, but for clinging tightly to the substrate in areas with strong currents, with their carapaces, chelipeds and other legs extended in the current to gather food (Ng *et al.* 2008). In particular, the first two pairs of ambulatory legs of these genera have remarkably long comb-like spines used to trap food particles.

Oncinopus has been considered to contain four species: *O. aranea* (De Haan, 1839); *O. neptunus* Adams & White, 1848; *O. angustifrons* Takeda & Miyake, 1969; and *O. postillonensis* Griffin & Tranter, 1986. Ng *et al.* (2008) also listed, in error, *O. subpellucidus* Stimpson, 1857 as a valid species, with *O. angulatus* Haswell, 1880 as a junior synonym. However, both species were described from Port Jackson, New South Wales, and both were treated as junior synonyms of *O. neptunus* by Griffin & Tranter (1986), who found only *O. neptunus* to be present in Port Jackson. Griffin & Tranter (1986: 38) also indicated that they had seen a female specimen from the Mortensen Pacific Expedition to Mindoro, Puerto Galera, the Philippines, which they believed to be a new fifth species, but refrained from describing it because they lacked a male.

The male first gonopod of *Oncinopus* species is very unusual amongst majoids in being strongly twisted about three times. This was critically described by Takeda & Miyake (1969), who first recognised the importance of this structure in species discrimination.

The present study was stimulated by the discovery of the new *Oncinopus* species during identifications of beam-trawl catches, following a environmental impact survey of Middle Arm, Darwin Harbour, Northern Territory, for the development of the new city of Weddell. Further investigation revealed that this new species was also present in other unidentified material from northern Australia in the collections of the Queensland Museum. Also amongst this latter material were two other *Oncinopus* species representing new distributional records, and these are also reported here.

Oncinopus aranea and *O. neptunus* are widespread Indo-west Pacific species, and well known from Australian waters (Griffin & Tranter 1986; Davie 2002; Poore 2004). However the other two species, *O. postillonensis* and *O. angustifrons*, appear to have a more limited range, so far being only known from southern Japan, the East China Sea, the Philippines and Indonesia (see Griffin & Tranter 1986; Marumura & Takeda 2009). Thus, it was of interest to discover *O. angustifrons* amongst the present material from north-western Australia. Poore *et al.* (2008) have already tentatively identified *O.* cf. *angustifrons* from somewhat further south in Western Australian waters, and thus, given the present material, it is more likely that their identification was correct, although their material was not re-examined as part of this study.

Institutional abbreviations: NTM, Museum and Art Gallery of the Northern Territory (formerly Northern Territory Museum), Darwin; QM, Queensland Museum, Brisbane.

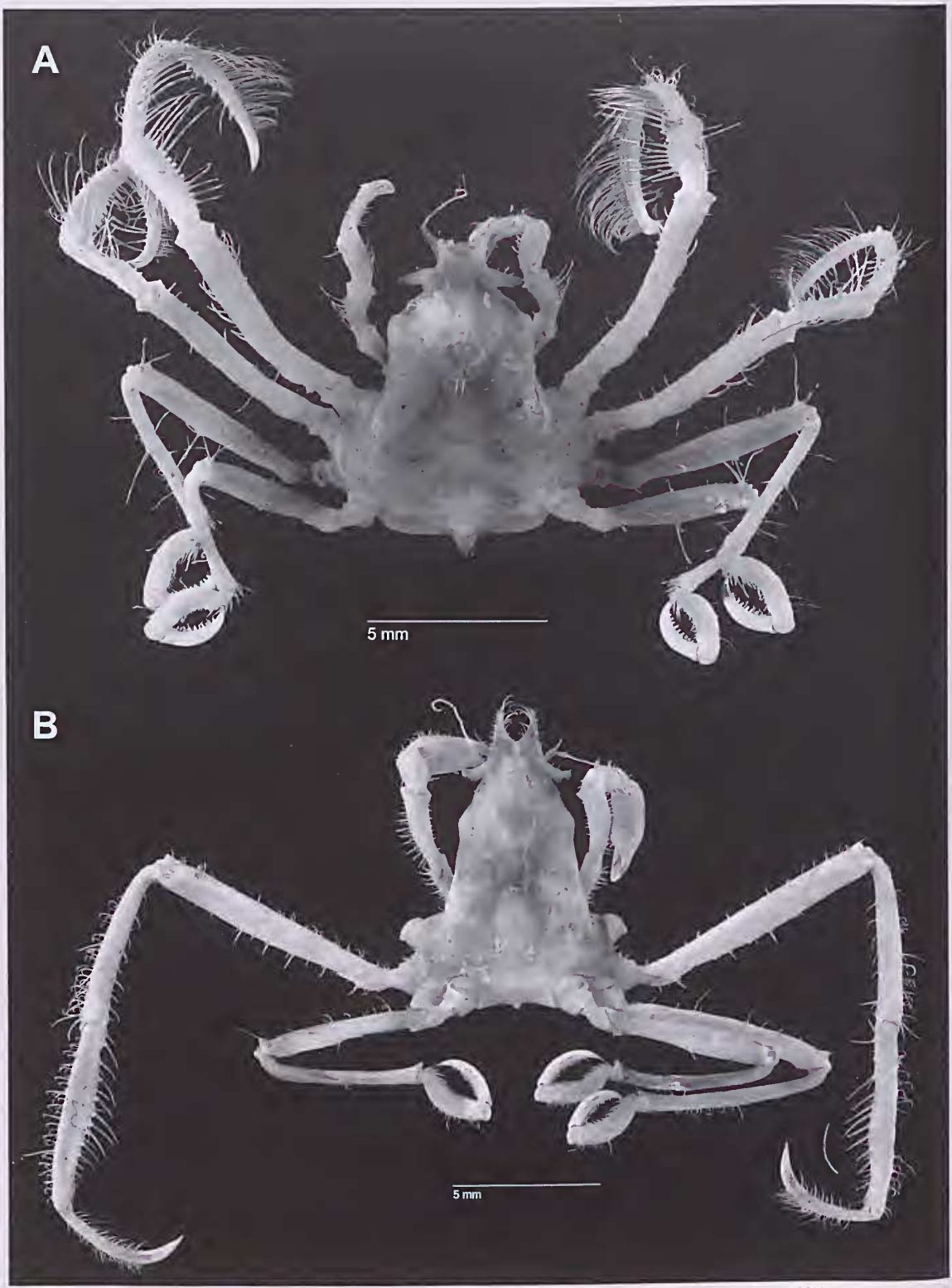

Fig. 1. *Oncinopus kathae* sp. nov., dorsal views. **A**, holotype female (NTM-Cr17096); **B**, paratype male (NTM-Cr17097).

Abbreviations: cb, carapace breadth; G1, male first gonopod; P2–P5, pereiopods 2–5. Measurements are of carapace breadth at the widest point followed by carapace length.

SYSTEMATICS

Family Inachidae Macleay, 1838

Oncinopus De Haan, 1839

Gender masculine. Type species, by monotypy, *Inachus* (*Oncinopus*) *aranea* De Haan, 1839. Recent. Japan (no specific locality given).

Inachus (*Oncinopus*) De Haan, 1839: 87.

Oncinopus. – Miers 1879: 645; 1886: 20; Alcock 1895: 182; Sakai 1938: 204 (key), 206; 1965: 66; 1976: 155; Griffin 1966: 274 (key); Takeda & Miyake 1969: 476; Griffin & Tranter 1986: 34; Davie 2002: 295; Poore 2004: 362–364; Ng, Guinot & Davie 2008: 112.

Diagnosis. Carapace rounded triangular, depressed, without spines; rostrum obtusely bilobate. Eyes non-retractile. Basal antennal article very slender, free distally, not reaching anterior margin of eyestalk. Weakly developed interantennular septum, no interantennular spine. Last pair of pereiopods in subdorsal position, last two pairs subchelate. Abdomen distinctly 7-segmented in both sexes. Male first gonopod twisted about 3 times.

Oncinopus kathae new species

(Figs 1–3, 4A, B, 5E)

Material examined. Holotype – NTM Cr.17096, female (7.1 × 9.8 mm, 8.8 mm postrostral), West Arm, Darwin Harbour, Stn 35, 12°34.997'S, 130°53.668'E, beam trawl, 8.9 m, coll. N. Smit & party, 28 Mar 2011. Paratpes – NTM Cr.17097, male (6.6 × 9.9 mm, 8.8 mm postrostral), West Arm, Darwin Harbour, Stn 37, 12°35.518'S, 130°53.335'E, beam trawl, 12.6 m, coll. N. Smit & party, 28 March 2011. QM W29099, male (6.0 × 8.8 mm, 8.0 mm postrostral), North West Shelf, Western Australia, CSIRO Stn 02B06BT, 19°04.4'S, 118°47.3'E, beam trawl, 82 m, coll. T. Ward & party, 28 April 1983. QM W23654, male (5.9 × 7.8 mm), North West Shelf, Western Australia, CSIRO Stn 02B05BT, 19°04.3'S, 118°50.5'E, beam trawl, 83 m, coll. T. Ward & party, 27 April 1983. QM W23657, male (5.9 × 7.1 mm), North West Shelf, Western Australia, CSIRO Stn 02B09BT, 19°28.5'S, 118°55.3'E, beam trawl, 40 m, coll. T. Ward & party, 26 April 1983. ADDITIONAL (NON-TYPE) MATERIAL – QM W23656, ovig. female (6.1 × 7.6 mm), North West Shelf, Western Australia, CSIRO Stn 03B03BT, 19°55.9'S, 117°55.5'E, beam trawl, 43 m, coll. T. Ward & party, 26 June 1983. QM-W17314, male (5.8 × 8.0 mm), female (6.3 × 7.4 mm), Gulf of Carpentaria, 12°00.5'S, 141°11.9'E, dredged, R.V. Southern Surveyor, CSIRO/QM party, 37 m, 3 December 1990.

Description. Carapace sub-triangular, more widely flanged posteriorly adjacent leg bases; carapace width approx. 0.75 (male) to 0.8 (female) postrostral carapace length. Surface smooth, but obscured by epibenthic fouling when alive; regions somewhat defined, with long swollen postrostral gastric elevation with slightly elevated mesogastric tubercle; rounded cardiac elevation armed with a pair of indistinct blunt lateral tubercles; intestinal region smooth. Rostrum of 2, narrow, triangular, flattened, blunt spines; outer lateral margins subparallel, separated by a broad V-shaped hiatus; length approx 0.1 times postrostral carapace length; inner margins with long curled stout setae; outer margins with shorter straight setae. Supraorbital eave not obviously broadened, but distinctly elevated, eyestalks clearly visible dorsally for most of their length; eyestalk short and stout, cornea enlarged. Hepatic margin produced laterally as broad rounded triangle, often quite pronounced. Branchial region with longitudinal rows of curled hairs on dorsal margin. Basal antennal article slender, smooth, distally free; second segment subequal or slightly shorter than basal segment, similarly slender; third segment about half length second; antennal flagellum long. Frontal margin deflexed below rostrum as a broad rounded lobe, not visible in dorsal view; interantennular septum obsolete. Antennules slender; palps folding transversely.

Third maxilliped smooth; ischium with a low, longitudinal ridge below articulation with merus, inner margin produced as a long broad rounded lobe extending about two-thirds length of merus; merus longer than wide, anterolateral angle not produced, inner lateral margin with raised rim. Pterygostomian region narrow, smooth; margin weakly indicated, smooth. Sternum generally smooth; sternites 3–4 deeply laterally excavated, with high narrow medial longitudinal ridge.

Male cheliped stout, relatively short, smooth; ischium and merus with longitudinal row of long bristle-like setae ventrally on outer face and a row of shorter hooked setae dorsally; carpus elongate, inner margin broadly rounded, with row of long bristle-like setae, outer face with shorter hooked setae; chela with short hooked setae dorsally and ventrally; palm approx. 2.3 times as long as high; fingers approx. 0.4 times as long as palm, weakly incurved; a narrow, smooth gape between fingers in proximal two thirds, finely dentate distally.

First ambulatory leg (measured from attachment to tip of dactyl) about 2.5 times (approx. 2.6) postrostral carapace length (female holotype), smooth, propodus and dactylus dorsoventrally flattened, length of propodus about 4.4 times width. P2 and P3 similar; anterior and posterior margins of carpus, propodus and dactylus with fringing rows of long strong setae; a row of short curled setae also present dorsally on merus, carpus and propodus; dactyli with a thick brush of long, softer setae on inner margin. P4 and P5 similar, subchelate, sexually dimorphic being obviously shorter in female; P5 shortest, angled dorsally, length (measured from attachment to base of dactyl) approx. 1.7 times postrostral carapace length in male, and 1.3 times in female; merus of P5 6.5 times

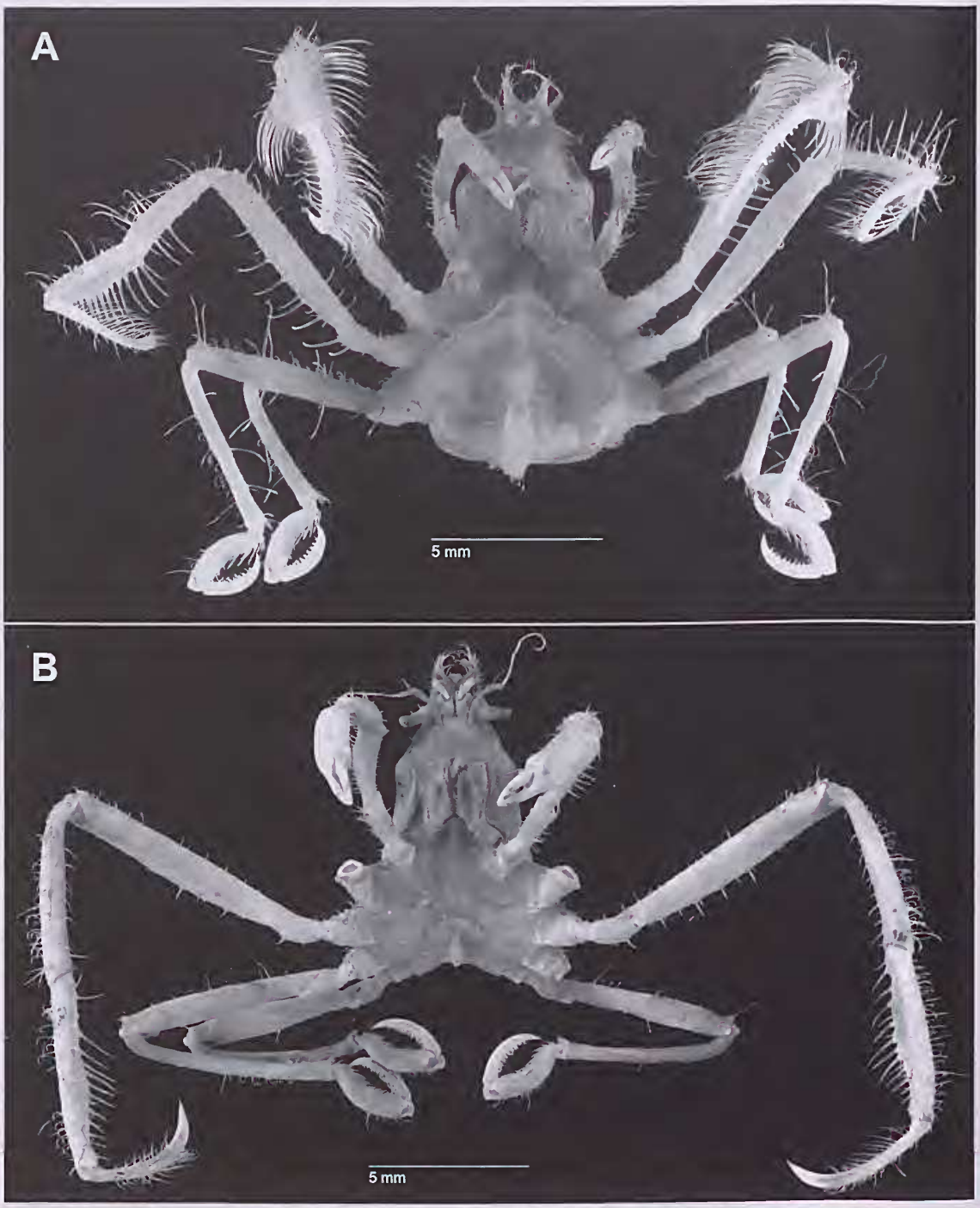

Fig. 2. *Oncinopus kathae* sp. nov., ventral views. **A**, holotype female (NTM-Cr17096); **B**, paratype male (NTM-Cr17097).

longer then wide in male versus 5.1 times in female; merus, carpus and propodus with sparse, long, plumose setae; carpi with cluster of plumose setae disto-ventrally; propodus arched, bearing thick setae on inner margin; dactyl strongly recurved, armed with row of 6–8 small teeth ventrally along its length.

Male abdomen broad, 7 free segments, third somite with lateral margin strongly produced, convex; somites 4–6 longitudinally ridged, with a medial tubercle anteriorly; sixth somite about two thirds as wide as third segment, width about 3.5 times length; telson broadly rounded, approx. 2.8 times wider than long. Female abdomen with fused somites;

a large medial tubercle on each of somites 3–5; a low medial ridge on sixth somite and telson. Female gonopore with simple ventral opening, not elevated; holotype with 9 large eggs.

Male first gonopod twisted, aperture terminal and abdominal; first major twisted section very wide and stout, second twist much narrower; distal portion beyond last twist tubular, extended about 0.3 times total length of G1, slightly recurved apically, tip truncate, not developed into prominent snout.

Remarks. *Oncinopus kathae* sp. nov. can be distinguished from other species of *Oncinopus* using the key provided. As pointed out by Takeda & Miyake (1969), gonopod morphology appears to be very good for species discrimination (see Fig. 5). By this feature, *O. kathae* is probably closest to *O. neptunus* but differs from that species in having a long, untwisted, tubular distal portion (Fig. 5E), and noticeably shorter pereiopods 3 and 4 (cf. Fig. 1B and 6A). The next most similar species is *O. angustifrons*, but again, the G1 of *O. kathae* differs by its simple tubular tip, and enlarged first twisted section which is much broader than the second twist (cf. Fig. 5B and 5E). Also the rostral lobes of *O. angustifrons* are more widely divergent, and the outer lateral margins are also divergent in that species (Fig. 4D, E), versus subparallel in *O. kathae* (Fig. 4A, B). *Oncinopus postillonensis* differs from all others by the long,

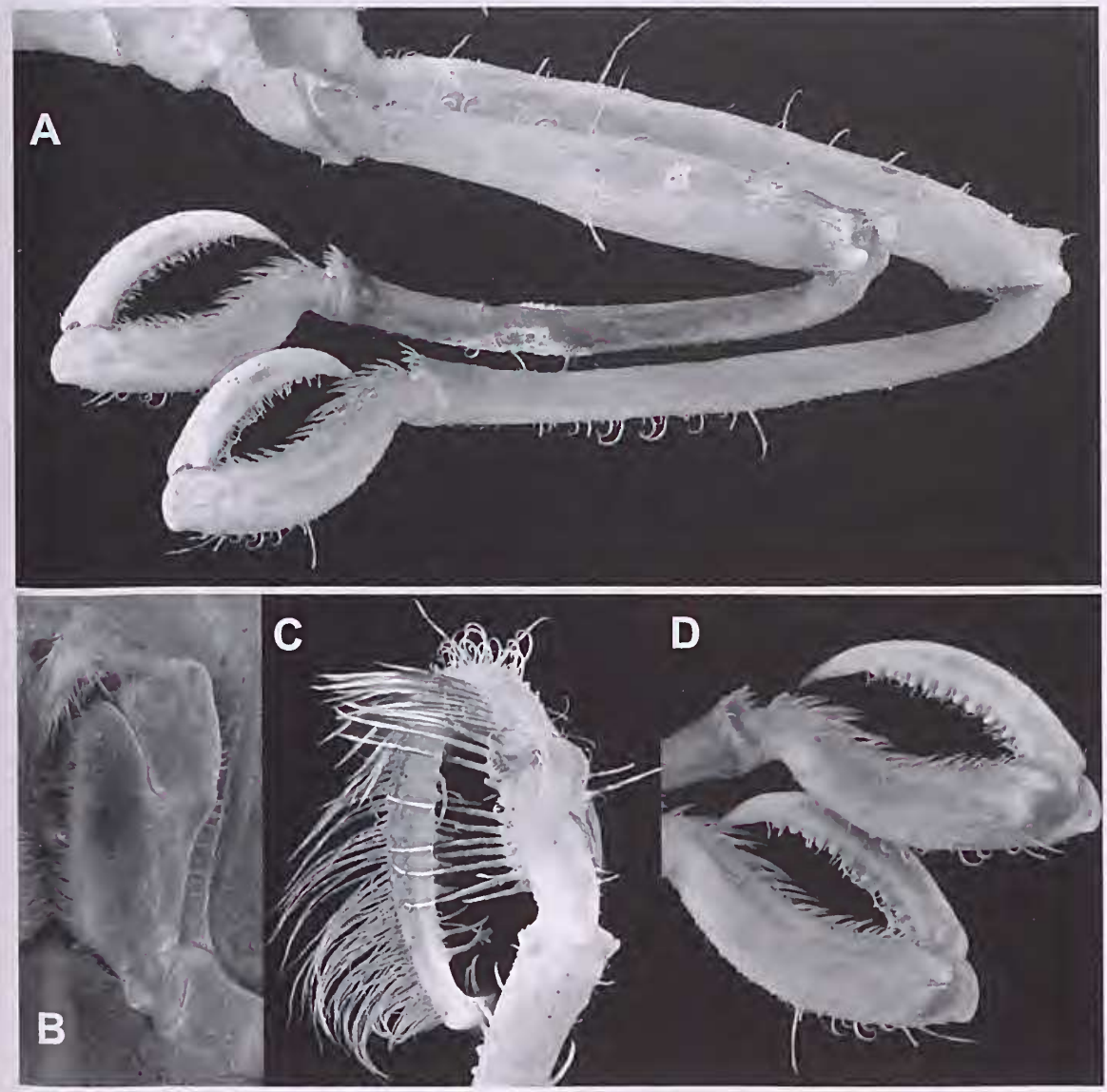

Fig. 3. *Oncinopus kathae* sp. nov., A, B, D: paratype male (NTM-Cr17097); C: holotype female (NTM-Cr17096); **A**, dorsal view of male pereiopods 4 and 5; **B**, third maxilliped; **C**, detail of female second pereiopod showing carpus, propodus and dactylus; **D**, ventral view of propodus and dactylus of male pereiopods 4 and 5.

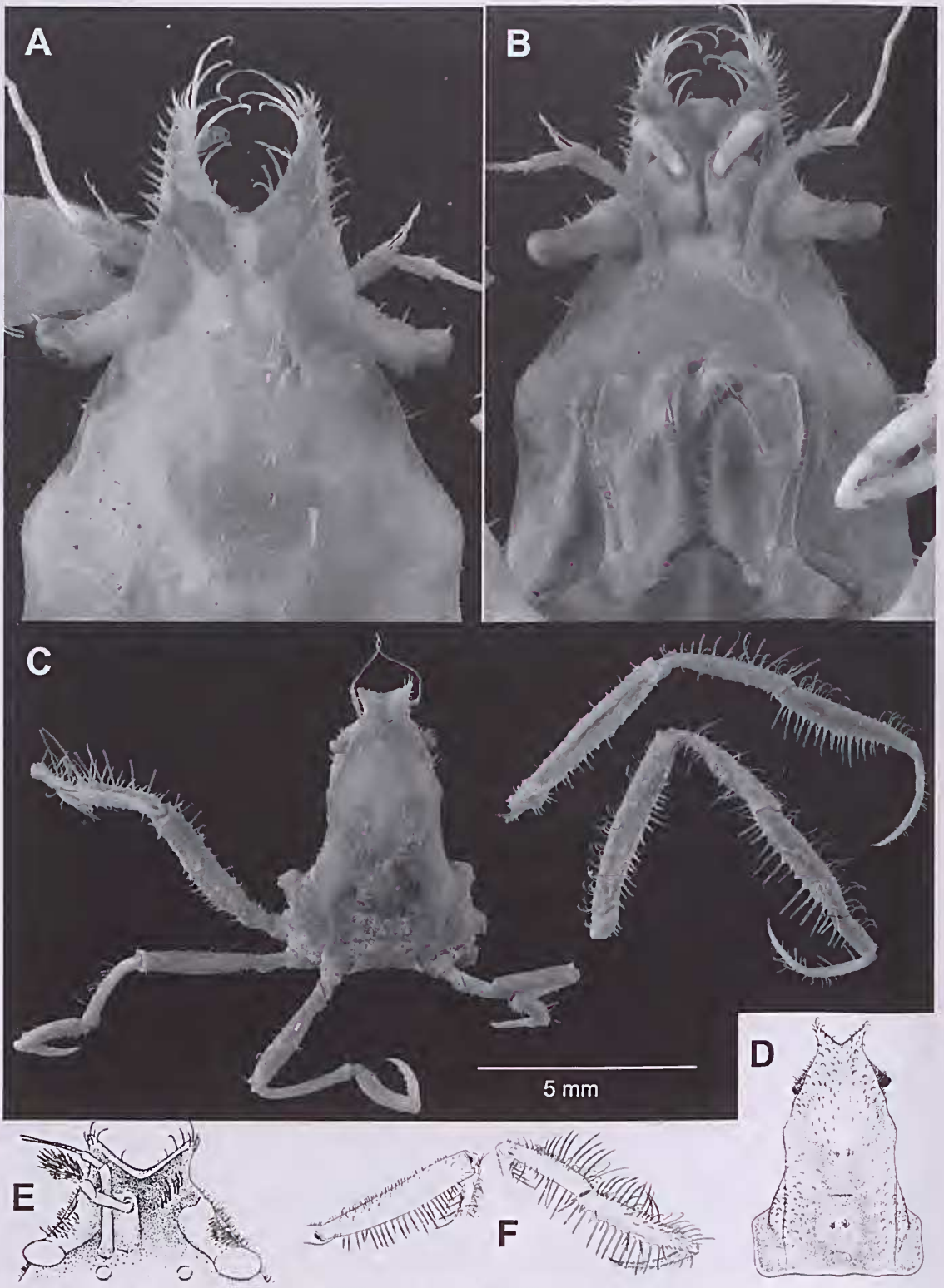

Fig. 4. **A, B,** *Oncinopus kathae* sp. nov., paratype male (NTM-Cr17097), dorsal and ventral views of frontal region. **C–F,** *Oncinopus angustifrons* Takeda & Miyake, 1969: **C,** male (4.3 mm cb) (QM-W23655); **D,** carapace of holotype; **E,** ventral view of frontal region of allotype female; **F,** second perciopod of holotype. (Figures D–F, after Takeda and Miyake, 1969: fig. 4).

dorsoventrally flattened rostral lobes (Fig. 6D, E) and by the broad interorbital region which conceals most of the eyestalk (Fig. 6E). Finally, *O. aranea* also differs in G1 morphology by its shorter distal section ending in a 'duck's head', and by having the second twist of the G1 at least as large and prominent as the first (Fig. 5C).

Poore *et al.* (2008) reported a single specimen of *Oncinopus aranea* from off the Western Australian coast (27°08'S) from 414 m depth. The carapace shows a marked resemblance to *O. kathae* sp. nov. however, as it appears to be a female and missing most limbs, it can not be unambiguously attributed to the present new species, at least not without direct examination.

The presence of a thick brush of long, softer setae on the inner margin of the dactyli of P2 and P3 (Figs 1A, 3C), has not been noted or illustrated for other species (cf. Fig. 6) and appears to be a unique character for *O. kathae* sp. nov. It is not present in the specimens of *O. angustifrons* or *O. aranea* studied here.

Oncinopus kathae sp. nov. also appears to have fewer, and relatively larger, eggs than the ovigerous female of *O. angustifrons*, and it would be interesting to compare this character with other species.

Habitat. Although field notes were made on the type of bottom for most of the West Arm stations sampled during the Weddell Survey, they were not recorded specifically for stations 35 or 37. However, it can be inferred to have been a mixture of low rocky clumps on a muddy sand substrate. Nearby sites were noted as being gravelly mud with some shell grit, or gravelly sandy mud. The North West Shelf sites were located in deeper, much cleaner, offshore areas, and there were small amounts of clean coral sand associated with some of the specimens. The depth range for *Oncinopus kathae* sp. nov. is 8 to 83 m.

Etymology. Named for my beautiful wife Kathleen – because the promise of a new species is long overdue, and not because of any morphological similarities!

Oncinopus angustifrons Takeda & Miyake, 1969

(Figs 4C–F, 5B)

Oncinopus angustifrons Takeda & Miyake, 1969: 478–481 figs 4, 5e, d; Takeda 1973: 31; Sakai 1976:156; Takeda & Kurata 1976: 124; Griffin & Tranter 1986: 34–35; Sakai *et al.* 2004: 255, 4 figs; Ng, Guinot & Davie 2008: 112.

? *Oncinopus angustifrons*. – Poore *et al.* 2008: 59, unnumbered fig.

Material examined. QM W23655, 2 males (3.1, 4.3 mm cb) 3 females (4.0, 5.1, 5.4 mm cb), North West Shelf, Western Australia, CSIRO Stn 02B06BT, 19°04.4'S, 118°47.3'E, beam trawl, 82 m, coll. T. Ward & party, 28 April 1983. QM W29100 (ex W23654), male (4.8 mm cb), North West Shelf, Western Australia, CSIRO Stn 02B05BT, 19°04.3'S, 118°50.5'E, beam trawl, 83 m, coll. T. Ward & party, 27 April 1983. QM W29101 (ex W23657), ovig. female (4.8 mm), North West Shelf, Western Australia, CSIRO Stn 02B09BT, 19°28.5'S, 118°55.3'E, beam trawl, 40 m, coll. T. Ward & party, 26 April 1983.

Diagnosis. Carapace strongly tapered anteriorly from broad hepatic region to constriction behind rostral lobes; gastric region circular, convex, median posterior part faintly demarcated from greater remaining part; cardiac region isolated, distinctly bifid at summit; rostral lobes weak, triangular, not dorso-ventrally flattened, separated by broad hiatus, lobes divergent; interorbital region only concealing basal part of unretracted eyestalk. Chelipeds slender, merus fringed with row of long, stout, setae along both borders; palm not swollen, slightly shorter than fingers. Male G1 strongly widened subapically; female gonopore weakly elevated, opening more posteriorly than medially. (After Sakai *et al.* 2004).

Remarks. The Australian material agrees very well with the detailed description of Takeda & Miyake (1969), and in particular the male G1 is a perfect match with their figure (see Fig. 5B). Interestingly, at some sites on the North West Shelf, it was collected sympatrically, in the same beam trawls, with specimens of the new species, *O. kathae*. Poore *et al.* (2008) tentatively identified *O.* cf. *angustifrons* from somewhat further south in Western Australian waters and although that material has not been studied as part of the present report, the present specimens add weight to their identification being correct.

Distribution. Japan – Ogasawara-shoto (Takeda & Miyake 1969, Takeda 1973); East China Sea (Takeda & Miyake 1969); Philippines – San Bernadino Strait (Griffin & Tranter 1986), Sulu Archipelago – off Jolo (Griffin & Tranter 1986); Indonesia – Kepulauan Kai and Aru (Griffin & Tranter 1986). Now extended to the North West Shelf, Western Australia. The bathymetric range for *Oncinopus angustifrons* is from 36 to 200 m.

Oncinopus aranea De Haan, 1839

(Figs 5C, 6B, C)

Inachus (*Oncinopus*) *aranea* De Haan, 1839: 100, pl. 29, fig. 2, pl. H; Yamaguchi 1993: 585.

Oncinopus aranea. – Adams & White 1848: 3; Miers 1886: 20; Ortmann 1893: 37; Alcock 1895: 183; Rathbun 1902: 133; 1906: 879; 1911: 247; Yokoya 1933: 137; Sakai 1936: 80, pl. 18, fig. 3; 1938: 206, fig. 3, pl. 21, fig. 3; 1976: 155, pl. 48, fig. 1; Takeda & Miyake 1969: fig. 5e–f; Takeda 1979: 153; Griffin & Tranter 1986: 35; Yamaguchi & Baba 1993: 331, fig. 109; Muraoka 1998: 22; Davie 2002: 295; Poore 2004: 364, fig. 107b; Sakai *et al.* 2004: 256, 6 figs; Poore *et al.* 2008: 59, unnumbered fig.

Oncinopus araneus. – Sakai 1935: 65; 1965: 66, pl. 27, fig. 1; Serène & Vadon 1981: 123; Ng, Guinot & Davie 2008: 112.

Nomenclatural note. The specific epithet *aranea* is a Latin noun meaning a spider. De Haan (1839) introduced it intentionally as a noun in aposition and his spelling has been followed by the majority of authors. Sakai (1935) and

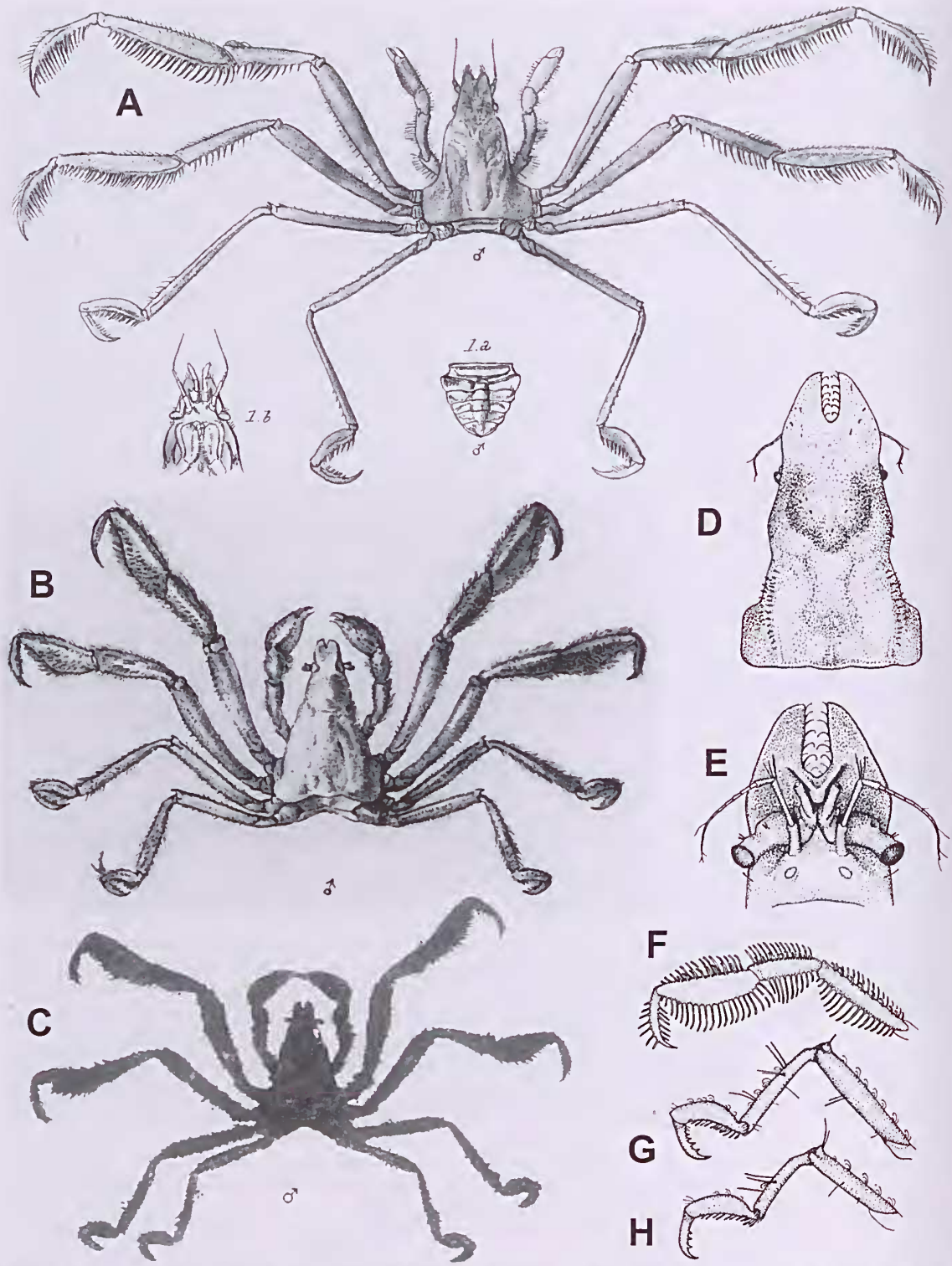

Fig. 6. **A**, *Oncinopus neptunus* Adams & White, 1848 (original figure from Adams & White, 1848: pl. 2, fig. 1); **B**, **C**, *O. aranea* (De Haan, 1839) (B, from De Haan, 1839, pl. 29 fig. 2; C, leetotype male, following Yamaguehi & Baba, 1993: fig. 109); **D–H**, *O. postillonensis* Griffin & Tranter, 1986 (After Griffin & Tranter 1986): D, earapaee, dorsal view; E, frontal region, ventral view; F, seeond left pereiopod, dorsal view; G, fourth left pereiopod; H, fifth left pereiopod.

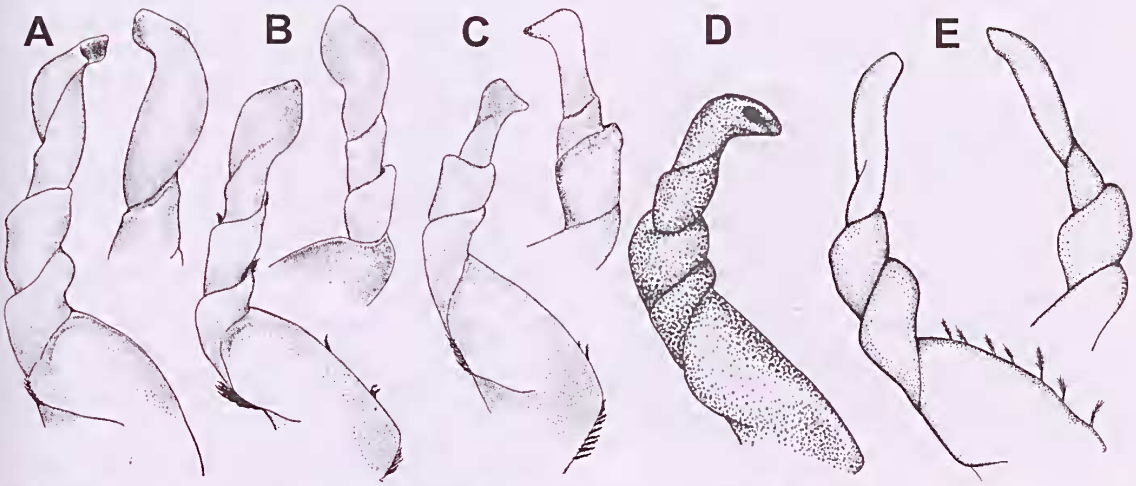

Fig. 5. Sternal and abdominal views of male first gonopods from known *Oncinopus* species. **A**, *O. neptunus* Adams & White, 1848 (from Port Jackson, NSW; holotype G1 is figured by Takeda and Miyake, 1969: fig. 3); **B**, *O. angustifrons* Takeda & Miyake, 1969 (holotype); **C**, *O. aranea* (De Haan, 1839)(from Amakusa Is., Japan); **D**, *O. postillonensis* abdominal view (holotype); **E**, *O. kathae* sp. nov. (paratype male NTM-Cr17097). A–C after Takeda & Miyake (1969); D after Griffin & Tranter (1986).

a minority of subsequent authors incorrectly interpreted it as an adjective.

Material examined. QM W23658, male (2.9 mm eb), North West Shelf, Western Australia, CSIRO Stn 01B16BT, 19°59.3'S, 117°03.5'E, beam trawl, 52 m, coll. T. Ward & party, 22 February 1983. QM W23660, male (3.1 mm eb), North West Shelf, Western Australia, CSIRO Stn 01B17BT, 20°00.2'S, 117°00.5'E, beam trawl, 53 m, coll. T. Ward & party, 22 February 1983.

Diagnosis (after Sakai *et al.* 2004). Carapace moderately tapered from hepatic region to constriction behind rostral lobes; gastric region circular; convex, median posterior part faintly demarcated from remaining greater part; cardiac region isolated, distinctly bifid at summit; rostral lobes weak, triangular – not dorso-ventrally flattened, lobes divergent, interorbital region only concealing basal part of unretracted eyestalk. Chelipeds slender, merus fringed with row of long, stout setae along both borders; palm not swollen, slightly shorter than fingers. Male G1 strongly widened distally, with subapical beak-like lateral lobe; female gonopore distinctly elevated, opening medially.

Remarks. The two specimens (both male) available to me from northwestern Australia agree with previous descriptions, and with the figure of the male G1 given by Takeda & Miyake (1969). Yamaguchi & Baba (1993) designated a leetotype and provided photographs of the male leetotype and female paralectotype.

Distribution. Seychelles and Cargados Carajos (Rathbun 1911); Laccadives (Alcock 1895); Maldives – (Alcock 1895), Nallandu (Rathbun 1902); Sri Lanka (Alcock 1895); Andamans (Alcock 1895); Malay Peninsula (Alcock 1895); Japan – (De Haan 1839), Kagoshima (Ortmann 1893), west of Suno-saki (Yokoya 1933), Shimoda (Sakai 1935), Tateyama Bay, Misaki, Shimoda, Nanki Shirahama, Ibusuki, and Nagasaki (Sakai 1938), Sagami Bay (Sakai 1965), Tokyo Bay, Sagami Bay, Shimoda, Kii Nagashima, and Kii Minabe (Sakai 1976), Shiono-misaki (Takeda 1979), Tosa Bay (Muraoka 1998); Philippines – north of Lubang Island (Serène & Vadon 1981); Sulu Archipelago – off North Ubian and off Jolo (Griffin & Tranter 1986); Indonesia – Moluccas Passage (Miers 1886), Lesser Sunda Islands, Selat Sunda, Selat Bali, Flores Sea, Seram, and Kepulauan Kai (Griffin & Tranter 1986); Arafura Sea (Miers 1886); Hawaiian Islands – Kauai and Modu Manu (Rathbun 1906). Bathymetric range: 3–400 m; Australia – southern Australian coast (Miers 1886; Poore 2004), Moreton Bay and Saumarez Reef, Queensland (Griffin & Tranter 1986a); range now extended to northwestern Australia.

KEY TO SPECIES OF *ONCINOPUS*

1. Rostral lobes broad, dorsoventrally flattened, separated by a narrow hiatus, inner margins of lobes parallel, outer margins curved, converging distally; interorbital region broad, concealing most of unretracted eyestalk..... .....*O. postillonensis* Griffin & Tranter
– Rostral lobes weak and narrow or triangular, not dorsoventrally flattened, separated by a broad hiatus, lobes divergent or outer margins parallel; interorbital region only concealing basal part of unretracted eyestalk. 2

2. Male G1 tubular or only slightly widened before apex; female gonopore a simple ventral opening, not elevated.....3
– Male G1 strongly widened before apex, or with a lateral lobe; female gonopore at least weakly elevated. 4

3. Male G1 with apex moderately flanged, last twist extending almost to tip; pereiopods 4 and 5 very long, merus of male P5 approx. 12 times longer than wide. .....*O. neptunus* Adams & White
– Male G1 with apex simple, truncate, distal portion tubular beyond last twist, extended about 0.3 times total length of G1; pereiopods 4 and 5 relatively shorter, merus of male P5 approx. 6.1 times longer than wide.....*O. kathae* sp. nov.

4. Male G1 strongly widened subapically; female gonopore on a weak elevation, opening more posteriorly than medially..... ..... *O. angustifrons* Takeda & Miyake
– Male G1 with a beak-like lateral lobe subapically; female gonopore distinctly elevated and opening medially..... *O. aranea* (De Haan)

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REFERENCES

Adams, A.& White, A. 1848. Crustacea. Part 1. Pp. 1–32, pls 1–VI. In: Adams, A. (ed.) *The zoology of the voyage of H.M.S. Samarang, under the command of Captain Sir Edward Belcher, C.B., F.R.A.S., F.G.S. during the years 1843–1846*. Reeve, Benham, and Reeve: London. [July 1848; for date of publication see Sherborn 1922: exi, and Clark & Presswell 2001: 163.]

Alcock, A. 1895. Materials for a carcinological fauna of India, 1. The Brachyura Oxyrhyncha. *Journal of the Asiatic Society of Bengal, Calcutta* **64**: 157–291, pls 3–5.

Davie, P.J.F. 2002. *Crustacea: Malacostraca. Eucarida (Part 2). Decapoda – Anomura, Brachyura*. Zoological Catalogue of Australia. 19.3B. CSIRO Publishers: Melbourne.

Griffin, D.J.G. 1966. A review of the Australian majid spider crabs (Crustacea, Brachyura). *Australian Zoologist* **13**(3): 259–297, pls 15–17, text-figs 1–3.

Griffin, D.J.G. & Tranter, H.A. 1986. The Decapoda Brachyura of the Siboga Expedition. Part VIII. Majidae. *Siboga-Expeditie* 39C4: 1–335, 22 pls.

Haan, W. de 1839. Crustacea. Pp. 1–243, pls A–J, L–Q, 1–55, circ. tab. 2. In: von Siebold, P.F. *Fauna Japonica sive Descriptio Animalium, quae in Itinere per Japoniam, Jussu et Auspiciis Superiorum, qui Summum in India Batava Imperium Tenent, Suscepto, Annis 1823–1830 Collegit, Notis, Observationibus et Adumbrationibus Illustravit*. Lugundi-Batavorum: Leiden [published from 1833–1850].

Marumura, M. & Takeda, M. 2009. Taxonomic studies on the crabs of the Nagai Collection preserved in the Wakayama Prefectural Museum of Natural History. II. Species new to Japan (2). *Nanki Seibutu* **51**(2): 75–80.

Miers, E.J. 1879. On the classification of the maioid Crustacea of Oxyrhyncha, with a synopsis of the families, sub-families and genera. *Journal of the Linnean Society of London. Zoology* **14**: 634–673, pls 12–13.

Miers, E.J. 1886. Report on the Brachyura collected by H.M.S. Challenger during the Years 1873–76. *Report of the Scientific Results of the Voyage of H.M.S. Challenger 1873–76* Part 49, Vol. **17**: i–xlix, 1–362, pls 1–29.

Muraoka, K. 1998. Catalogue of the brachyuran and anomuran crabs donated by Prof. Dr. Tune Sakai to the Kanagawa Prefectural Museum. *Catalogue of the Collection in the Kanagawa Prefectural Museum of Natural History* **11**: 5–67, pls 1–16.

Ng, P.K.L., Guinot, D. & Davie, P.J.F. 2008. Systema Brachyurorum: Part I. An annotated checklist of extant brachyuran crabs of the world. *Raffles Bulletin of Zoology (Supplement)* **17**: 1–286.

Ortmann, A.E. 1893. Die Decapoden-Krebse des Strassburger Museums, mit besonderer Berücksichtigung der von Herrn Dr. Döderlein bei Japan und bei den Liu-Kiu-Inseln gesammelten und z.Z. im Strassburger Museum aufbewahrten Formen. Theil VI. Abtheilung: Brachyura (Brachyura genuina Boas), 1. Unterabtheilung: Majoidea und Cancroidea, 1. Section Portuninea. *Zoologische Jahrbücher, Abtheilung für Systematik, Geographie und Biologie der Thiere* **7**(1): 23–88, pl. 3.

Poore, G.C.B. 2004. *Marine decapod Crustacea of Southern Australia. A guide to identification*. CSIRO Publishing: Collingwood, Victoria.

Poore, G.C.B., McCallum A.W. & Taylor, J. 2008. Decapod Crustacea of the continental margin of southwestern and central Western Australia: preliminary identifications of 524 species from FRV *Southern Surveyor* voyage SS10-2005. *Museum Victoria Science Reports* **11**: 1–106.

Rathbun, M.J. 1902. Crabs from the Maldive Islands. *Bulletin of the Museum of Comparative Zoology at Harvard College* **39**(5): 123–138, 1 pl.

Rathbun, M.J. 1906. The Brachyura and Maerura of the Hawaiian Islands. *Bulletin of the United States Fish Commission* **23**(3): i–viii, 827–930, figs 1–79, pls 1–24.

Rathbun, M.J. 1911. Marine Brachyura. The Percy Sladen Trust Expedition to the Indian Ocean in 1905, under the Leadership of Mr J. Stanley Gardiner. Vol. III, part II, No. XI. *Transactions of the Linnean Society of London (Zoology)* (2)**14**(2): 191–261, figs 1–2, pls 15–20.

Sakai, T. 1935. List of marine animals around Shimoda area. *Biological Report of Shimoda Marine Biological Station, Tokyo University of Literature and Science* **1**: 23–85, 3 pls, 2 maps. [In Japanese]

Sakai, T. 1936. *Crabs of Japan: 66 plates in life colours with descriptions*. Sanseido: Tokyo. [In Japanese]

Sakai, T. 1938. Brachygnatha, Oxyrhyncha. *Studies on the crabs of Japan 3*. Yokendo: Tokyo.

Sakai, T. 1965. *The Crabs of Sagami Bay collected by His Majesty the Emperor of Japan*. East-West Center Press: Honolulu.

Sakai, T. 1976. *Crabs of Japan and the adjaccnt seas*. pp. i–xxix, I–773 [English vol.]; 1–16, 251 pls [Plates vol.]; 1–461[Japanese vol.]. 3 vols. (Kodansha: Tokyo). Pp. i–xxix, 1–773 [English vol.]; 1–16, 251 pls [Plates vol.]; 1–461 [Japanese vol.].

Sakai, K., Davie, P., Guinot, D. & Türkay, M. 2004. *The crabs of Japan* Version 1.0. ETI CD-ROM, University of Amsterdam: The Netherlands.

Serène, R. & Vadon, C. 1981. Crustacés décapodes: brachyoures. Liste préliminaire, description de formes nouvelles et remarques taxonomiques. Résultats des Campagnes MUSORSTOM, 1. Philippines (18–28 mars 1976), vol. 1, no. 5. *Mémoires ORSTOM* **91**: 117–140, figs 1–3, pls 1–4. [In French with English summary]

Takeda, M. 1973. A new genus and a new species of the Parthenopidae from the sea off the Ogasawara Islands (Crustacea, Brachyura). *Bulletin of the National Science Museum, Tokyo* **16**(1): 30–36.

Takeda, M. 1979. Systematic and biogeographic notes on the crabs obtained by dredging at the sea around Cape Shiono-misaki, Kii Peninsula. *Memoirs of the National Science Museum, Tokyo* **12**: 151–157, figs 1–3. [In Japanese with English summary]

Takeda, M.& Kurata, Y. 1976. Crabs of the Ogasawara Islands. 2. First report on the species obtained from stomachs of fishes. *Researches on Crustacea* 7: 116–137, figs 1–6, tables 1–2. [In Japanese with English summary]

Takeda, M. & Miyake, S. 1969. Crabs from the East China Sea III. Brachygnatha Oxyrhyncha. *Journal of the Faculty of Agriculture, Kyushu University* **15**(4): 469–521, figs 1–12, pls 17, 18.

Yamaguchi, T. 1993. A list of species described in the Crustacea Volume of Fauna Japonica as belonging to the Japanese Fauna. Pp. 571–598, figs 1–2. In: T. Yamaguchi (ed.) *Ph. F. von Siebold and Natural History of Japan. Crustacea*. Shimoda Printing Inc.: Japan.

Yamaguchi, T. & Baba, K. 1993. Crustacean specimens collected in Japan by Ph. F. von Siebold and H. Bürger and held by the National Natuurhistorisch Museum in Leiden and other museums. Pp. 145–563. In: Yamaguchi, T. (ed.) *Ph. F. von Siebold and Natural History of Japan Crustacea*. Shimoda Printing Inc.: Japan.

Yokoya, Y. 1933. On the distribution of decapod crustaceans inhabiting the continental shelf around Japan, chiefly based upon the materials collected by S.S. Sôyô-Maru, during the years 1923–1930. *Journal of the College of Agriculture, Tokyo Imperial University* **12**(1): 1–226, figs 1–71, tables 1–4.

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